Food and Agriculture
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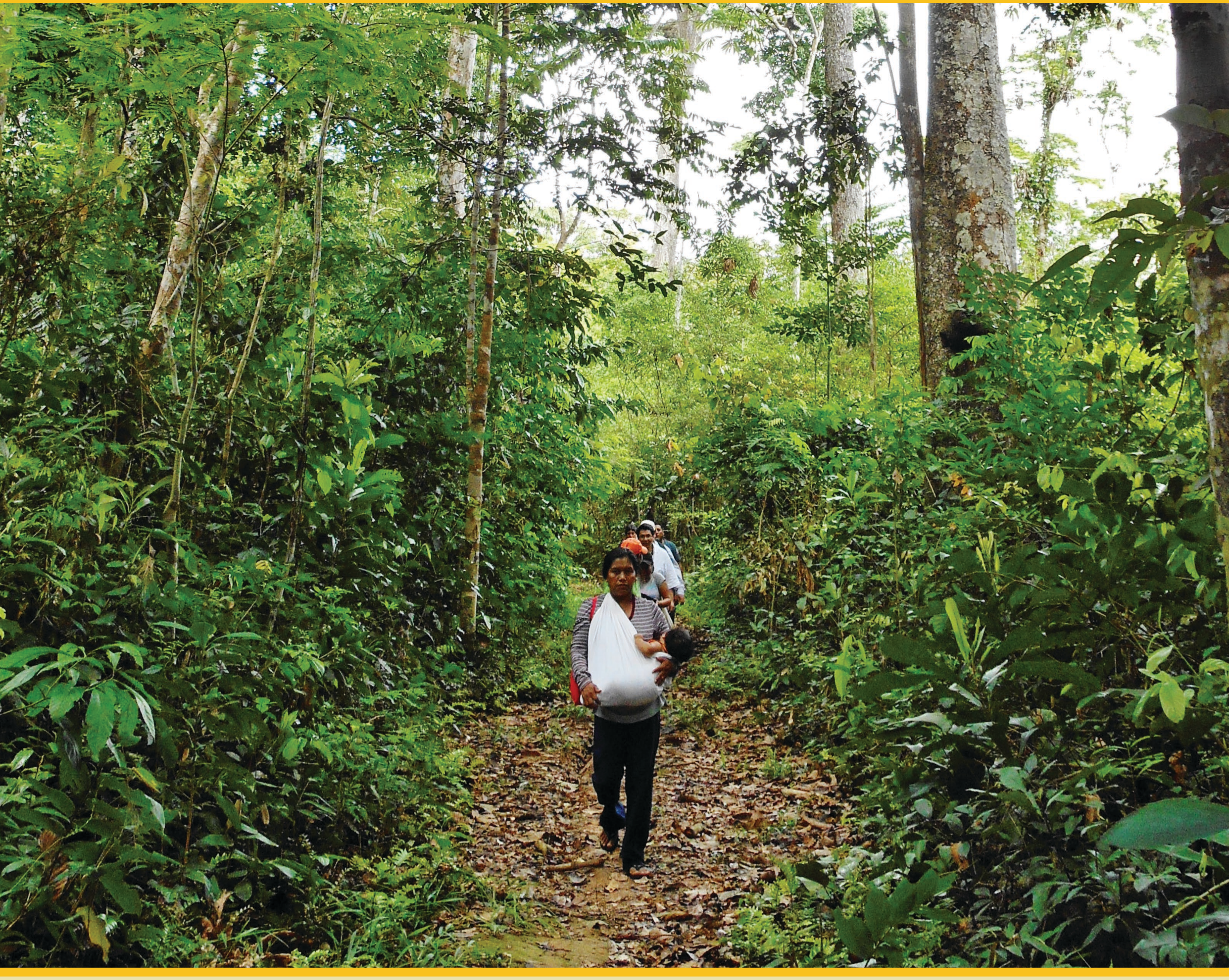
Migration and forests

What state and non-state actors can do to optimize economic, social and environmental outcomes



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Food and Agriculture Organization of the United Nations
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Executive summary

People move into and out of forests all the time and for many different reasons. Data on migration, however, are rarely forest-specific. Thus, broad migration patterns such as internal, within-country migration (1 billion people in 2018) and international migration (281 million people in 2020) should be qualified by forest-specific data. Most migration is voluntary, but sometimes it is forced (82.4 million in 2020). However, the reasons that people choose to remain, leave or return to forests, and whether these decisions are voluntarily or forced upon them are only partially known for a few study sites. Similarly, there are limited data available on the degree to which migration into or out of forests is permanent, temporary or cyclical, involving multisited households who maintain both rural and urban livelihoods, and move between the two. Recommendations in this document on what state or non-state actors can do to optimize economic, social and environmental outcomes are therefore complex and necessarily generic to a certain degree. Additional country-specific work will always be necessary.

Push and pull factors can be found in changing population dynamics, politics, economic growth or decline, and in social or environmental change; climate change increasingly exacerbates these factors. Outcomes are often perceived differently by local or global stakeholders. For example, when migrants move into forests and extract resources (e.g. cutting forests to grow food or harvest fuelwood), local stakeholders may perceive this as good. But the same extraction can be perceived as a threat by global stakeholders concerned with climate change mitigation and biodiversity conservation. At times, the perceptions of local and global groups align, for example, when forest outmigration opens up new conservation options, or when migrant remittances are invested in forest landscape restoration or enhanced forest and farm productivity; importantly, policies and institutions can decisively shape these outcomes.

This study assesses the migration and forest interface. It describes why migration outcomes in forest landscapes matter, what drives them, how they can be shaped, and who can do what to optimize these outcomes. It draws qualified conclusions about the benefits of maximizing the opportunities that migration brings while curtailing obvious detrimental incursions into the remaining high-value forests or indigenous territories. This work seeks to enhance understanding on how forest policies and tenure over land and forest resources influence movement in and out of forests. It seeks to destigmatize migration and facilitate movements and flows of people, cash and information, except where they threaten high conservation value forests, or the pre-existing rights of Indigenous Peoples and local communities. The publication also seeks to develop migration-aware forest policies and extension support. Finally, it seeks to empower local member-based organizations as key actors in deciding what constitutes good outcomes, and how to optimize them in collaboration with support providers and governments.

This document assesses migration and forests to distil the following main policy recommendations for government decision-makers based on the findings:

- **Update knowledge on migration and forests:** Since forest-linked migration greatly varies by context in its nature, scale, drivers, duration, cyclicality and outcomes, continuing investments should be made in project planning with donors for developing migration research at national universities to inform agencies responsible for forest management. These efforts can increase understanding of the patterns, drivers and impacts of migration on both forests and people in each country, especially as regards internal migration, which is often poorly documented, and regarding ecologically intact forest areas.

- **Improve tenure security in forest landscapes:** Securing different culturally appropriate types of forest land tenure is vital for sustainable forest use. Secure tenure must also be inclusive of regular or periodic multisited households and be based on negotiated land-use plans involving both local production and use areas, and any conservation areas. This is key to ensuring that migration decisions (remain, leave or return) are informed and orderly, with adequate incentives for long-term productive investments in tree growing and forest management.

- **Define "no-go" zones of high conservation value or indigenous teritories:** In view of the growing numbers of countries pursuing strategies for reducing emissions from deforestation and forest degradation (REDD+), many are making use of free-access geospatial information, supported by ground-based field sampling plots, to identify where forest loss is occuring, and where the remaining contiguous areas of biodiverse natural forest and indigenous teritories lie. Having these data can inform forest migration planning.

- **Treat migration (except in no-go zones) as an opportunity to enhance sustainable forest landscapes:** Aspirations and abilities to remain in, or move into or out, of forest landscapes can increase livelihood benefits for both men and women. Local organizations can harness the benefits of migration by having specific plans for those who remain, move out of, or move into local forest communities. But the utility of a positive approach to migration should be tempered by planning in order to reduce risks of migration into forest landscapes with high conservation value in terms of climate change mitigation or biodiversity.

- **Facilitate transport, telecommunications and remitance finance possibilities except in no-go zones:** Transport and recruitment services for labour migration, telecommunications that support knowledge transfer, and financial services that allow remittance transfers can all help optimize outcomes for both men and women who choose to leave, return. or remain in forest landscapes. Careful consideration must be taken, however, to ensure that new infrastructure does not faciltiate the exploitation of forest landscapes with high conservation value in terms of climate change mitigation or biodiversity.

- **Enhance inclusive migration-aware extension and support services:** Promote enabling investments that increase forest and farm productivity in forest landscapes for both men and women who decide to remain or return, and for household members who stay behind, and mobilize diaspora and increase the transfer of social and financial remittances, including knowledge and skills, to optimize outcomes of forest-linked migration.

- **Make empowerment of local member-based organizations key to beneficial migration outcomes:** Local organizations are set up to enhance livelihoods in different ways and to manage the trade-offs between competing interests. As a result, their empowerment in any approach to forest-linked migration can improve the efficiency of delivering better outcomes for the men and women remaining to sustainably manage the forest, for those leaving and sending back remittances, and for those moving into forests in order to ensure that their activities align with sustainable forest management objectives. Appropriate government policies and collaboration with support providers can help to empower local organizations in optimizing economic, social and environmental outcomes.

Exploring the interface between migration and forests

1

1.1 Exploring the interface between migration and forests

Migration is about human mobility. People are inherently mobile. In ancient times, hunter gatherers sought out sources of food, water, cooking fuel and shelter. As agriculturalists, people sought out fertile land, irrigation, places and means of trade. As industrialists, people sought out sources of technical information, mineral wealth, energy for processing, and urban centres with demand for products and services. In the digital era, people seek out restorative spaces to escape it all. Most of us migrate during our lifetimes. Daily movements are usually referred to as commuting, with no permanent or temporary change in residence. Sometimes mobility is voluntary (e.g. for education or employment) and sometimes it is forced (e.g. by natural disasters, economic collapse, violence or wars). Sometimes it is permanent (e.g. people relocating) and sometimes temporary (e.g. seasonal migration that may involve circular patterns each year). Many migrants involve multisited households that regularly or periodically move between two different locations (e.g. moving between forest and urban areas seasonally and equally at home in both). In short, there are many types of migration.

Forests cover almost a third of the world's surface area. Approximately 4 billion of Earth's 13 billion ha of terrestrial surface area are covered in forests. Even on agricultural land, which covers a further 5 billion ha, more than 1 billion ha have tree cover of more than 10 percent in a variety of agroforestry systems (Zomer *et al*., 2016). Forests come in many different types: natural forests (ranging from biodiverse tropical moist and tropical dry forests or open savannah woodlands to the much more uniform forests of the temperate or boreal regions); planted forests (in industrial plantations are often monocultures); and agroforestry (where tree cover and biodiversity is highly variable with context). Differences between forests in the global North and global South are compounded by the many ways in which forests are managed and used. Furthermore, increasing population density does not necessarily result in tree-cover loss. For example, in the semi-arid Sahel, farmland management was found to increase woody cover to a greater level (12 percent) than found in neighbouring savannas (6 percent) (Brandt *et al*., 2018). Forest type, terrain, soil, rainfall and land-use policies and practices all affect what impact will result from migration into or out of a forest.

There is always widespread forest dependence. From approximately 9 billion ha of land worldwide comprising forest and farm landscapes, an estimated 4.35 billion ha is controlled (owned or managed) by smallholders, local communities and Indigenous Peoples (FAO, 2022). In 2019, 95 percent of rural people worldwide (4.17 billion) lived within 5 km of a forest, and 75 percent (3.27 billion) lived within 1 km of a forest (FAO, 2022). Of these, an estimated 2.5 billion comprise Indigenous Peoples and local communities (IPLCs) (Hodgdon, 2021). Estimates suggest that around 1.3 billion forest-dependent people (Chao, 2012) and 1.6 billion forest-proximate people (Newton *et al*., 2020) live in or around the world's remaining forests, the former estimate comprising just less than 0.5 billion Indigenous Peoples and 0.8 billion other local communities (Chao, 2012). IPLCs have traditional use rights covering more than 50 percent of the world's forests, but these are only legally recognized in 15 percent of those lands (Hodgdon, 2021). Moreover, because many households are multisited in both the global North and South between forests and urban areas, it is thought that the users of, for example, non-wood forest products (NWFPs) are much higher than previously thought and range conservatively between 3.5 billion and 5.76 billion users globally – significantly expanding the idea of "forest dependence" (Shackleton and de Vos, 2022).

Global patterns of migration are overwhelmingly internal, seasonal and voluntary, but international, longer-term, or forced migrations also occur in some contexts – and these contextually specific patterns apply also to forest-linked migration (Hecht *et al*., 2015). For example, globally, in 2017, FAO estimated that there were 1 billion internal migrants (FAO, 2018) compared to 281 million international migrants in 2020; both categories included substantial numbers of seasonal and circular migrants (UNDESA PD, 2021). From the total population of migrants globally, there were 82.4 million forcibly displaced persons in 2020, of whom 65 percent originated from six countries including Syrian Arab Republic, Bolivarian Republic of Venezuela, Afghanistan, South Sudan and Myanmar (UNHCR, 2020).

1.2 Aim of this document

This study explores the interface between migration and forests in line with FAO's migration framework (FAO, 2016; FAO, 2019; FAO and FILAC, 2021). Within the overall context for migrations and forests, FAO's vision is that migration must be treated as follows (FAO, 2019):

> *Migration from, to and between rural areas occurs as a voluntary and informed decision. People in rural areas are resilient to threats and crises and have sustainable livelihoods that allow them to decide whether to stay in their communities of origin or to migrate. If they decide to migrate, people are able to do so through safe, orderly, and regular channels within their countries or across international borders. When migration occurs, migrants and their families, as well as communities at origin and destinations, are supported in maximizing the benefits of migration and addressing any negative effects. In host communities, migrants participate in food and agricultural systems and are enabled to contribute to rural development.*

The objective of this work is to provide information and policy recommendations that help inform and guide orderly, safe, regular and responsible migration and mobility of people to and from forest landscapes, in line with FAO's global goals of eradicating hunger, food insecurity and malnutrition, eliminating poverty, and promoting the sustainable management and utilization of natural resources.

Why migration outcomes in forest landscapes matter

2

2.1 The importance of the forest–migration interface

Forests are globally important. The world's 4 billion ha of remaining forests and 1 billion ha of agroforestry are critical for global public goods. They are key to both climate change mitigation and biodiversity conservation. In terms of climate change mitigation, against overall global emissions in 2018 of 58 GtCO2e yr−1, forests comprises a net carbon sink of −7.6 GtCO2e yr−1 (Harris *et al*., 2021). This sink involves a balance between gross carbon removals (−15.6) and gross emissions from deforestation (8.1). Forests soak up roughly the equivalent of all transport emissions worldwide. In terms of biodiversity, forests provide habitats for about 80 percent of amphibian species, 75 percent of bird species and 68 percent of mammal species. About 60 percent of all vascular plants occur in tropical forests (FAO, 2020a; 2022).

Forests are also locally important. Local livelihoods depend on forests for a host of local public goods including products such as food, fuel, construction materials, medicines and cosmetics, and services such as the maintenance soil fertility, hydrological cycles and pollination services for crops. As noted earlier, the number of people dependent on NWFPs is much larger than previously thought (Shackleton and de Vos, 2022). Hence, forest-related patterns of migration (people moving into or out of forests) affect the supply of global and local public goods, the trade-offs between them, and the patterns of who will benefit from them. The idea that forests are empty of people is largely misconstrued (Hecht *et al*., 2015). Evidence suggests that virtually all forests are either inhabited or used, and that frequent uses such as hunting extend far into remaining intact forests (Benítez-López *et al*., 2019). Migration into or out of forests therefore affects not only forests, but also people, notably IPLCs.

In certain contexts, people may choose to move into forest areas. For instance, in response to policies promoting formal settlements and agro-industrial development such as in the Brazilian Amazon; government transmigration programmes as in Indonesia; agro-industrial infrastructure developments as in Borneo; or demographic pressures such as increasing population of subsistence swidden framers in the Congo Basin Forest (Tyukavina *et al.,* 2018). In most cases, migration into forest landscapes has had negative impacts on the forest and the IPLCs already living there, although the impact on migrant livelihoods depends on context and can be positive.

Colonization programmes that drive migration into forests often have an extremely high turnover, even exceeding 70 percent in Brazil (Carrero *et al.,* 2020). In such programmes, the dynamics of land concentration continue (see also Carte *et al*., 2019). Inequalities that underpinned migration in the first place are then reproduced at the frontier, causing further migration into forests or regular urban labour migration to supplement inadequate incomes from the land. In such cases, deforestation links with migration may be less strong than other processes such as land speculation, land grabbing, resource plundering or other short-term forms of accumulation (Carrero *et al*., 2020).

Sometimes the prevailing migration decisions are for people to move out of forest landscapes. Since the 1950s there has been a general abandonment of farmland globally, but especially in Europe and North America (Li and Li, 2017). Changing socioeconomic factors leading to economic marginalization of land is one main cause, but often complemented by the search for education or employment in countries such as China (Zhang *et al*., 2018), Mexico (Hernández-Aguilar *et al*., 2021), Northeast India and Nepal (Muktiar and Sharma, 2019). While it is true that there have been high migration rates out of some forest landscapes; however, it is also true that absolute numbers of forest-based inhabitants may have stayed the same or even increased due to demographic growth – so the question of how "remainers" use the forests has high significance.

Sometimes these patterns of outmigration are gender-skewed, for example, outmigrating male wage labourers in Nepal are leaving higher numbers of women in rural forest areas (Lama, Kharel and Ghale, 2017). This can lead to increasing tenurial vulnerabilities, work burdens and stress where there are few opportunities to assume roles in male-dominated decision-making bodies. This is especially true in South America and South Asia, where the scale of these migration patterns has led to the observation of the "feminization of agriculture" (Agrawal, 2011). But the context-dependent complexity in which women's work burdens increase – but not necessarily with associated empowerment, access to information, skills or advice – makes this a contested framing.

Often, migration decisions involve complex and often circular patterns. These involve the movements of both regular or periodic multisited households, and less predictable in- and outmigration as people exercise different decisions at different times. For example, research from Peru shows how assumed Andes–Amazon migration also included substantial within-Amazon migration and cyclical Andes–Amazon–Andes migration (Menton and Cronkleton, 2019). Negative spirals can occur involving mutually reinforcing links. For example, deforestation-driven migration (as commercial forest clearance displaces local communities) can then result in migration-driven deforestation (as displaced people clear new forest frontiers, in countries such as Brazil, Mexico and Paraguay (Jokisch *et al*., 2019; Britta, Niederhöfer and Ferrara, 2021).

Government policies and programmes also have significant impacts, which affect both the direction and nature of forest-linked migration (see Box 1). For example, policies of the Federal Government of Brazil between 2002 and 2014 were to colonize remote regions with low population density. Migration through the resultant formal settlement programmes was responsible for a staggering 30 percent of total deforestation in the Amazon Biome in 2014 (Assunção and Rocha, 2016). Countervailing policies then emerged to establish a protected areas network. This Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAm), launched in 2004, helped establish a total protected area coverage of 59.2 million ha within which inmigration is discouraged (West and Fearnside, 2021). For a period, these protection policies did reduce deforestation in the Amazon. Lamentably, however, this was divorced from the process of securing Indigenous lands. Indigenous lands fell, not under the jurisdiction of environmental agencies, but under the direct supervision of FUNAI (National Indian Foundation), an institution of the Ministry for Justice. The word "lamentably" is used because Indigenous People are known to be more effective than protected areas at conserving forests (Porter-Bolland *et al*., 2012; Fa *et al*., 2020) so the failure to secure their rights is an opportunity missed. The broader point, however, is that inconsistencies between policies lead to suboptimal outcomes for migration and forests.

Box 1. Peru: how contrasting policies alter the impact of migration on forests

In what is a typical conundrum in the Peruvian Amazon, the Government has sometimes encouraged migration into the forest to integrate the region into the country. For example, the Peruvian Government's Programa de Reactivación Agropecuaria y Seguridad Alimentaria (PRESA) encouraged peasant communities to form associations, granted land titles to the areas around the association, and granted access to credit for members to farm on those lands. PRESA thereby encouraged a vast influx of migrants from the Andes who settled in Loreto, Madre de Dios and other Amazonian regions (Alvarez and Naughton-Treves, 2003). But the impacts varied. For example, smallholder oil palm producers concentrated along roads where they caused substantial deforestation, much more than households settling along nearby rivers that cultivated more traditional crops (Bennett, Ravikumar and Cronkleton, 2018). At other times, however, the Peruvian Government has blamed migrants for deforestation. For example, the National Strategy on Forests and Climate Change (Peru's national REDD+ strategy for reducing emissions from deforestation and degradation) notes the concentration of deforestation around roads and blames migrants for the subsequent deforestation (Menton and Cronkleton, 2019).

Patterns of forest-linked migration are changing. Long-standing movements from the original migration of humanity out of Africa and their expansion across other continents, to the seasonal patterns of hunting and gathering, shifting cultivation and animal herding, are now giving way to new patterns of migration that differ in size and scope. Yet, recent research shows that, due to the prevalence of circular patterns of movement and the balance of incoming and outgoing migration, forest areas are rarely, if ever, empty or devoid of people and economic activity (Hecht *et al*., 2015). Forests are also rarely, if ever, pristine wilderness. And the multiple pathways, flows and intensities of migration lead to a great variety of outcomes – from economic to social and environmental, as described in the following sections.

2.2 Economic, social, and environmental outcomes of forest-linked migration

The economic outcomes of migration are often positive in income generation terms. This is true both for those migrating (often the very reason they chose to migrate) and for those remaining in forest landscapes. Despite COVID-19 crisis, the scale of remittances in 2020 to low- and middle-income countries reached USD 540 billion (World Bank and KNOMAD, 2020). Around 40 percent of this reached rural areas (IFAD, 2017) – the total being roughly three times larger than Official Development Assistance. In Ethiopia, for example, rural outmigration and remittances increased household food security in forest areas in terms of daily calories per consumer by 22 percent (Adebaw *et al*., 2020). But this is not always the case. Remittances can also entrench patterns of power and inequality. Sometimes migration, especially for education, instead of generating income can become a financial burden on rural households. For example, in Sulawesi, Indonesia, forest households had to intensify agricultural production and forest product collection to pay for migrants' education (Juniwaty *et al*., 2019).

Social outcomes of forest-linked migration are often positive. They often increase social opportunities in education or work experience for those migrating, and social remittances for those remaining. Migrants and the diaspora who find work often contribute to local development by transferring knowledge, useful information, skills and capabilities. Yet the balance between migration involving a "brain drain" or becoming a "brain gain" is context-specific. There is a direct brain drain and loss of labour when aspiring youth leave rural areas. But this can be pushed towards a brain gain by policies that facilitate migration and support sustainable reintegration rather than trying to impede migration (de Haas, 2005). A more nuanced position that facilitates both migration and reintegration endorses the validity of educational aspirations while also encouraging migrants to communicate with and return to contexts where acquired skills, information and investment capital make up a brain gain that increases productivity in forest landscapes (Lowell and Finlay, 2002).

Advances in information and communication technologies and globalized economic systems are making these more nuanced approaches easier. Distant places are now much better linked, which allows for "telecoupling" and "translocality". Telecoupling refers to the enhanced socioeconomic and environmental interactions between distant migrants and how their knowledge or finance is used in their place of origin. Translocality refers to a wide range of enduring, open and non-linear processes through which migrant people develop relations with more than one place (see Radel *et al*., 2019). Investing in ties and connectivity that bind migrants to their place of origin is easier now. It can therefore become a key consideration in how to optimize the social outcomes of migration (Macqueen and Campbell, 2020).

Environmental outcomes of forest-linked migration are variable. Some meta-analyses have posited a strong positive link between population density and deforestation (Busch and Ferretti-Gallon, 2017). But this needs to be qualified by the observations that in Latin America it is often large cattle, soy and sugar landholdings, or in Asia, large palm oil plantations that drive deforestation (Seymour and Harris, 2019), but all with low population densities. In Africa, the picture is somewhat different, in that expanding populations dependent on subsistence agriculture, for example, in the Congo Basin, are likely to have a strong detrimental impact on forests (Tyukavina *et al*., 2018).

Generally, there is a strong positive link between high economic returns to agriculture and deforestation (Busch and Ferretti-Gallon, 2017). High economic returns to agriculture pull in migrants due to either more favourable climatic and topographic conditions or lower costs of clearing forests and transporting products to markets due to good road infrastructure. Road building in such situations is particularly bad for forests in terms of both migration into forests and deforestation (Laurance *et al*., 2014). Yet, in marginal areas with low economic returns from agriculture, the reverse is true such that these areas may suffer from out-migration resulting in comparatively less deforestation. This is particularly the case where prevalent worldviews are less consumption-oriented and more in tune with nature, and Indigenous territories show comparatively even less deforestation (Fa *et al*., 2020). Outmigration can lead to forest resurgence, but there is little evidence that this occurs widely (Angelsen *et al*., 2020; Baquié *et al*., 2021). In some cases, lower population densities in forest areas lead to increased deforestation because of lower protections and increasing space for new uses of the forest that ensue (Hecht *et al*., 2015).

2.3 Gender and age-related outcomes of forest-linked migration

Gender is an important dimension of migration. Women account for almost half of all international migrants (UNDESA PD, 2021). The recent feminization of migration has accompanied women's growing participation in the workplace. This includes but goes far beyond markets for domestic workers (Boyd, 2021). Gender is a dynamic process of social construction, varying by context, that shapes vulnerabilities and consequently shapes both decisions of whether to migrate or not, and the resources to do so (Lama, Hamza and Wester, 2021). The general fact that more women are migrating than was once the case, however, should not mask the fact that, in some specific contexts, migration is still predominantly male, leaving women as heads of households with a range of issues, including in some places their limited access to decision-making structures. With this important caveat, recent overviews have commented on the largely beneficial nature of migration for women migrants. It often improves women's autonomy, skills and self-esteem. It can also strengthen their authority and worth in their families and communities. It can sometimes advance more equitable social norms or improve their rights and access to resources, including in forested areas to which women migrants return. Yet, these general gains are often restricted by social norms or laws (such as evidence that migrant women continue their reproductive roles), or by continuing gender discrimination (where returning migrant women may return to the same gendered dynamics as before), or by gender-specific vulnerabilities during the migration process (Fleury, 2016).

Age is also an important consideration for migration. Youth migration (young people aged 15–34 years) makes up roughly a third of global totals (UNDESA PD, 2021). Youth show the highest propensity to migrate out of rural areas due to the lack of gainful employment or entrepreneurial opportunities in agriculture and related rural economic activities (Deotti and Estruch, 2016). But the exact patterns often vary with the cultural norms governing life-course transitions, for example, around education or adulthood (Bernard, Bell and Edwards, 2014). It is often individual rather than household characteristics that define whether youth migrate or not (de Brauw, 2019). Education is often a driver of youth outmigration from rural (and forest) areas. But forest communities are transforming in late modernity as transportation and communication technologies allow greater access to education, recreation and consumer goods in remote areas (Corbett, 2009). Strategies to address youth migration should therefore consider those who leave, those who remain, and those who may return with new knowledge and skills (Macqueen and Campbell, 2020).

What drives migration into and out of forests?

3

3.1 The role of human desires, aspirations and abilities

As in other types of migration, forest-linked migration is essentially a decision that is made relative to perceived alternatives (Stark, 1984). This decision comprises three main elements: a desire for change, the aspiration to move as part of that change, and the ability to move (IOM, 2017; Carling and Schewel, 2018).

The desire for change is usually based on people's current conditions, perceptions of life there and elsewhere, and life aspirations, hence, the strong links between migration and reduced agricultural productivity, poverty, tenure insecurity, conflict and violence. There are also gender dimensions in each of the three elements of migration.

Aspirations to move into or out of forests could either be to escape negative conditions or move towards better conditions. For poor forest-dependent people, remote forest areas may be viewed as a poverty trap, while for more affluent media-connected individuals, they may be viewed as desirable lifestyle decisions (see the recent COVID-19 pandemic increase in US rural property prices – Li and Zhang, 2021). Aspirations to move into or out of forests can also either be constructive (for example, to pursue education, entrepreneurship or relocate to appreciate natural beauty) or destructive (for example, to pursue radicalization, military mobilization or criminal evasion of the law).

Ability to move is usually defined by opportunity and resources. This is one reason why increasing development in migration-prone areas may accelerate migration (Carling and Talleraas, 2016). The ability to move does not mean that people decide to move; in the case of many Indigenous communities, they choose to stay because of strong cultural or spiritual attachment to a place. But some who want to move may be unable to do so, for example, due to immobility, death, being trapped en route, having to return, or wishing to leave but being unable to do so.

Drivers of forest-linked migration affect various types of migrants differently. Differences occur between men and women, as noted earlier, between adults and youth, or between Indigenous Peoples and immigrants, citizens and refugees. All face different opportunities and constraints. Nor are migration decisions simple, including whether to migrate or not, what location to choose, when to go, or how to marshal the resources and effort needed. Spatial, temporal, economic and social complexities abound. Movements may be permanent or circular, internal or external, rural to rural, rural urban or urban to rural. Each of these aspects affect forest livelihoods (Hecht *et al*., 2015).

Migration is influenced by relative changes across multiple sectors and at varying scales – all of which are in turn influenced by prevailing regional conditions, policies, social and infrastructure networks, and relationships that affect household options and individual desires (ibid.). Care is therefore needed to understand each contextually specific pattern – looking into the status of migrants prior to migrating, their motivations for migration, their preferences for internal or international migration, options for movement, connectivity and remittance transfer options, and gender dynamics (Yang, Djoudi and Bakhtibekova, 2019). Drivers of forest-linked migration involve a mix of demographic, political, economic, social and environmental push and pull factors (Carr, 2009) that together affect outcomes in integrated ways (Van Hear *et al*., 2018).

3.2 Different types of drivers for forest-linked migration

Demographic factors driving forest-linked migration are particularly linked to population growth. Countries with higher rural population growth (e.g. in Africa), notwithstanding strong intensification effects, tend also to see increases in the arable land areas, which can often involve migration into, and deforestation in, formerly forested lands (Bilsborrow, 1992). Areas of low population density and, critically, those that have the perception of being an "open frontier", attract those seeking land and resources (Jones *et al*., 2018).

Political factors affecting forest-linked migration include both the degree of land- and forest-tenure security, broader economic policies (for example, trade rules and credit schemes) and perceptions of the overall political climate (for example, populism or corruption). Trigger factors such as wars and other social conflicts often spin out of these broader political issues (Carr, 2009). Tenure status has long been known from migration studies to be a key determinant of migration (alongside age and educational attainment). For example, early migration studies showed that people who rent their houses are three to four times more likely to migrate than individuals or households who are owners and have therefore invested in their land and property (Clark, 1986). In forest landscapes, tenure rights are critical to addressing deforestation due to people migrating into forest areas, and to the success of commercial community forestry, which might reduce migration out of forest areas (Hajjar *et al*., 2020). Recent growth in Indigenous rights and social justice movements pushing for tenure security are often countered by the rise in populist governments who may sacrifice forests and the environment for national economic growth, with limited benefit to Indigenous Peoples and local communities (Shyamsundar *et al*., 2021). Violence and conflicts often result from political systems that disregard customary rights.

Economic factors that drive forest-linked migration include a well-known set of primary drivers such as the availability of productive land, poverty and food insecurity, lack of employment or income-generating opportunities, and inequality (FAO, 2016; 2018; FAO *et al*., 2018; 2019). Migration is most likely from populations that are both poor and unequal, and towards places that are better off and more equal (Plotnikova and Ulceluse, 2021). This is particularly the case where large-scale agricultural investments displace local communities (German *et al*., 2020). Additional economic factors that drive migration include a lack of social protection, marginalization of groups, and better opportunities elsewhere (FAO, 2016; Bezu and Holden, 2017). The degree to which forest landscapes offer opportunities for economic advancement is also affected by infrastructure development (such as roads and electricity), technological enhancements (such as possibilities for agroforestry intensification and added value), and market and value chain development (Macqueen and Campbell, 2020).

Social factors driving forest-linked migration include migrants' status, perceptions, attitudes and values often embedded in a community (for example, the degree to which people feel content and culturally settled or have a frontier mentality of finding something better over the horizon) (Carr, 2009). Social inequalities are particularly influential in driving migration as the visibility of better livelihoods is stark for the poorer groups in such situations. Social and digital mobility is also a key way of reducing inequalities (Hackl, 2018). It is arguable that forest transitions are, above all, social and behavioural. Decision-makers dealing with migration and forests need to integrate better representations of people's agency in their mental models to better understand divergent points of view and refine strategies, through explicit theories of change, that will deliver desired outcomes (Garcia *et al*., 2020).

Ecological factors are the final set of factors driving forest-linked migration – including soil fertility, topography, vegetative cover and water availability. Reduced agricultural productivity and climate change affect around one-third of the land used for agriculture and about 1.5 billion people worldwide (FAO, 2016). Changes in ecological factors can involve gradual negative changes (such as the loss of soil fertility linked to erosion), rapid negative changes (such as floods or severe drought) and even gradual positive changes (such as regenerative agriculture or forest landscape restoration leading to more ecologically favourable conditions). Ecological factors are very much shaped by the changing global climate.

Impacts of climate change and COVID-19 pandemic

4

4.1 Climate change impacts

Climate change is an increasing slow-onset exacerbating driver of forest-linked migration. It alters the balance of push and pull described earlier (Black *et al*., 2011; Rigaud *et al*., 2018; Kaczan and Orgill-Meyer, 2020). Quantifying climate change's effects on migration and forests is complex, challenging and highly context-specific involving both slow onset changes and sudden disasters. Most slow-onset climate-related effects on migration and forests seem to occur internally within the affected country. These concern gradual changes in temperature, rainfall quantities and timing. Even with these slow-onset changes, global projections show that without early and concerted climate and development action, as many as 216 million people could move within their own countries due to slow-onset climate change impacts by 2050 (Clement *et al*., 2021). They will migrate from areas with lower water availability and crop productivity and from areas affected by sea-level rise and storm surges. With increasing temperature extremes, a spillover into international migration is also likely. While little can be said with certainty, hundreds of millions may have additional incentive to migrate, largely from warm tropical and subtropical countries to cooler temperate countries; India is the country with the greatest number of people with additional incentive to migrate (Chen and Caldeira, 2020).

Climate change is also escalating the occurrence and severity of extreme events such as storms, floods, heatwaves, droughts and fires. Climate-related droughts and fires in the Amazon, for example, have had major impacts on forest-related emissions (Aragão *et al*., 2018). But the cascading domino effects of events such as Amazonian fires or floods in countries such as Mozambique on housing, jobs, education, capital savings and so on are still poorly understood – and are likely to have increasingly significant effects on migration (Reichstein, Riede and Frank, 2021). To recover, families may have to sell homes or land, or migrate for work. In 2016, there were reported to be 23.5 million persons displaced by disasters, many with climate linkages (IDMC, 2017). These figures are expected to rise fast and substantially (Cattaneo *et al*., 2019). But again, the actual patterns are likely to be complex and highly context-specific – with extreme weather events (such as floods) sometimes preventing migration by washing away roads and destroying or eroding the resources necessary to migrate.

The gradual deterioration of climatic conditions and the reducing economic profitability of agriculture are generally associated with migration into cities (the process of urbanization) (Castells-Quintana, Krause and McDermott, 2021). Rising temperatures are known to increase international outmigration from agriculture-dependent countries, with the gross domestic product (GDP) of these countries more negatively affected by higher temperatures than in non-agriculture-dependent countries (Backhaus, Martinez-Zarzoso and Muris, 2015; Cai *et al*., 2016; Bezu *et al*., 2019). Increasingly variable rainfall and temperature, and more frequent extreme weather events such as droughts or floods, are known to increase production risks and livelihood vulnerability (Gray and Mueller, 2012; Bohra-Mishra, Oppenheimer and Hsiang, 2014; Mastrorillo *et al*., 2016). Effects will be particularly felt in agriculturally marginal areas, notably African dryland forest areas, where the adverse effects of climate change may not necessarily cause mass migration but are likely to alter human mobility from more voluntary toward more forced displacement or entrapment (Thalheimer *et al*., 2021).

At present, it is less the short-term disasters such as floods or drought that drive migration and more the longer-term reductions in available food. This is borne out by studies that trace a link between reduced agricultural productivity and increased migration (Wrathall and Suckall, 2016). This is similar to a spiral effect since increasing migration reduces productivity of the agriculture sector, which slows economic growth due to the reduction in economic opportunities for those supplying inputs and services to the agriculture sector (Bezu *et al*., 2019). For example, in United Republic of Tanzania, a 1 percent reduction through adverse weather in agricultural income raises the probability of internal migration by 13 percent in the next year (Kubik and Maurel, 2016).

4.2 COVID-19 pandemic impacts

COVID-19 crisis has also affected migration patterns, but often in countervailing ways in countries such as India, Indonesia and Nepal (Golar *et al*., 2020; Laudari, Pariyar and Maraseni, 2021; Saxena *et al*., 2021). The initial spread of COVID-19 pandemic reduced economic activity as countries around the world restricted the mobility of their citizens. As a result, many migrant workers returned home (FAO, 2021a), both internally and internationally (Lee *et al*., 2021). The loss of interconnectedness, which then led to a loss of assets, generally prompted a "collapse" cascade, including urban-to-rural migration (due to loss of urban jobs), and an increase in the illegal exploitation of forests and wildlife (Duguma *et al*., 2021). But the overall effects of the pandemic on forests are highly context-specific.

One recent assessment suggests that COVID-19 pandemic has been roughly neutral in its overall outcome for forests (Wunder *et al*., 2021). Different factors have balanced out. Some contexts saw changing dynamics for commodities that drive deforestation. But this included both inflationary supply-side issues (e.g. reduced labour availability and production shortages) and deflationary demand-side issues (e.g. lower incomes or precautionary saving that reduced consumer demand for those same commodities). Market forces were also sometimes counterbalanced by government stimulus responses. In some contexts, there was a rise in informality, due in part to the reduced capacity to monitor land-grabbing and illegal activities. In others, there was a slowdown in government road investments that slowed the opening of forests to illegal activities (Wunder *et al*., 2021). COVID-19 crisis has also had impacts on remittances falling. But despite early projections of a 20 percent fall (see World Bank and KNOMAD, 2020), remittances have remained resilient, and officially recorded remittance flows to low- and middle-income countries reached USD 540 billion in 2020, just 1.6 percent below the 2019 total of USD 548 billion (World Bank and KNOMAD, 2021).

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How to shape forest-linked migration

5

Any state or non-state actor seeking positive outcomes for both forests and people must recognize from the outset that forest-linked migration is context-dependent; hence, single approaches are unlikely to be helpful. Forest-linked migration involves many different types of mobility, with many different outcomes, and many different drivers.

Migration as an informed decision often generally benefits both sending and receiving regions – even if there are specific negative economic, social or environmental outcomes that need to be managed at origin and destination (FAO, 2019; Kent, Norman and Tennis, 2020). Migration is a key means of reducing inequalities that are known to harm both the wealthy and the impoverished (and society at large) almost uniformly across a wide range of indicators (for a clear explanation, see Wilkinson and Pickett, 2009). Indeed, freedom of movement is implicit in both the Universal Declaration of Human Rights (UDHR) and the International Covenant on Civil and Political Rights (ICCPR), and nations are therefore morally obliged to respect and protect the human right to migrate, irrespective of potentially negative outcomes (Ho, 2019).

Maximizing the opportunities afforded by forest-linked migration, while constraining obvious threats to high conservation value forests or the pre-existing territories of Indigenous Peoples and local communities aligns with FAO's vision for migration outlined in the introduction (FAO, 2016; 2019). But how can an approach to forest-linked migration be advanced which is good for both people and forests?

Recent surveys by the Forest and Farm Facility (FFF) of knowledge needs among 41 forest and farm producer organizations (FFPOs) from six countries (Covey *et al*., 2021) identified outmigration and especially youth engagement as a key concern. In response, 59 percent of the FFPOs interviewed had established active youth programmes (Box 2; Macqueen and Campbell, 2020). These youth programmes were essentially set up for people choosing to remain in forest landscapes. For example, in Asia, the International Land Coalition has developed a leadership training course for young agrarian activists and community organizers in Asia (ILC, 2019) which, with support from the FFF, is being further developed by the Asian Farmers' Association for Sustainable Rural Development (AFA) into an ambitious modular set of training programmes for youth leadership among forest-linked community groups. Despite such advances, in further analysis of how best to handle migration for forest-linked youth (Macqueen and Mayers, 2020), a new approach entitled "prosperity in place" was proposed that dealt not only with "remainers" but also with "leavers" and "returnees" (Macqueen and Campbell, 2020). A focus on "prosperity in place" applies equally to those whose place remains in forest landscapes, those who migrate out of forests, and those who return to forest landscapes.

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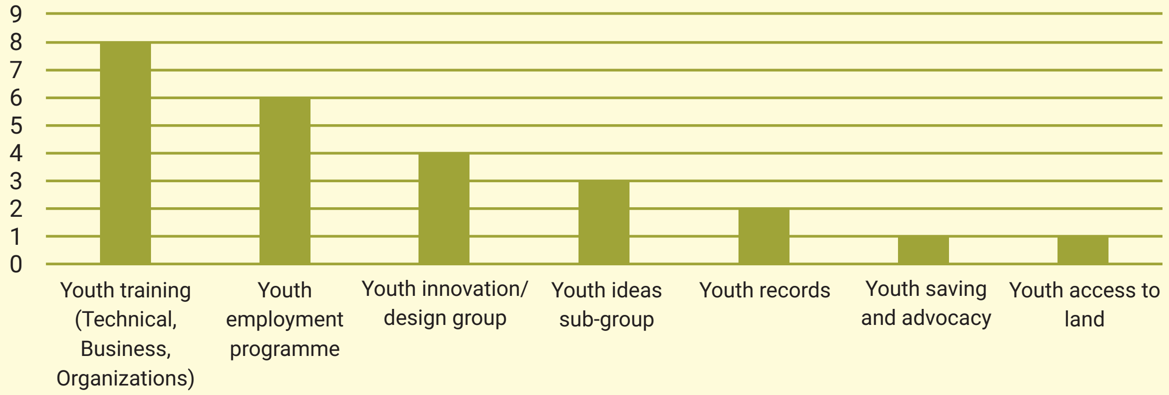
Box 2. How organizations use youth training programmes to mitigate outmigration

Forest and Farm Facility (FFF) surveys of 41 forest and farm producer organizations (FFPOs) in Ecuador, Ghana, Kenya, Nepal, Viet Nam and Zambia demonstrated that 59 percent of these FFPOs had active youth training programmes developed in part to avoid outmigration (Macqueen and Campbell, 2020). The nature of these programmes varied, but often focused on youth training (for example, in technical aspects of forest and farm management, business or organizational management) or on youth employment more generally. In several cases, there were attempts to tap into young people's interests by establishing innovation or design groups or by establishing youth advisory groups to the main general assemblies of the organizations.

Nature and number of youth programmes



5.1 Maximizing options for those remaining in forests

Maximizing sustainable and remunerative forest livelihood outcomes for those who remain in forest landscapes can be thought of in terms of increasing opportunities for decent work. Opportunities for decent work are vital since work for many serves as a primary sense of purpose, belonging and identity (Michaelson *et al*., 2014). Decent work in forest landscapes must involve three main elements (Ciulla, 2000; Wolf, 2010): the objective value of what is being done (i.e. sustainable forest business that enhances local cultures and livelihoods); the objective value of how it is being done (i.e. respect core labour standards and ethical principles of security, autonomy, freedom and social recognition); and the subjective engagement with the "meaning-making" process (i.e. fulfilment through it and social recognition for it).

Strategies and tactics to create sustainable forest jobs as opportunities for people to stay are vital. Options include: securing forest and land-use tenure for both men and women (Aggarwal *et al.*, 2021); investing in organizational development to further member's interests (Pretty *et al.*, 2020); strengthening processes of risk management (Bolin and Macqueen, 2016); developing organizational resilience to change, including thirty practical options for resilience to climate change (Macqueen, 2021); providing gendered technical extension support, especially using innovations in information technology (FAO, 2021b); ensuring that business incubation support is owned and managed by local producer organizations (Macqueen and Bolin, 2018); and mobilizing local organizational finance, supported by remittances from engaged diaspora, which can then attract investment finance (ibid). Putting in place these locally led capabilities will make forest-dependent people resilient to threats and crises and have sustainable livelihoods that allow them to decide whether to stay in their communities of origin or to migrate (FAO, 2019). It is also our best hope for saving remaining forests (Scherr, White and Kaimowitz, 2004) and the main business of FAO-hosted partnerships such as the FFF.

5.2 Maximizing options for those who leave forests

Maximizing sustainable and remunerative forest livelihood outcomes by maintaining links with those who choose to leave forest landscapes is also a profitable strategy – hence, the need to facilitate orderly, safe and regular migration. Strengthening links between people and their places of origin can lead to environmental as well as socio economic benefits for people who remain and for those who migrate. Whether people choose to leave voluntarily for education or work, or are forced through circumstances beyond their control, they face challenges to their "sense of place": the fast and immediately perceived meanings of their new space jar with the slower place meanings formed through longer-term processes of social construction in their place of origin (Raymond, Kyttä and Stedman, 2017). Investing in and facilitating a "sense of place" can be useful to maintain mental wellbeing in migrants (Mattes and Lang, 2021), through for example designing urban forest landscapes (Egoz and de Nardi, 2017). But "sense of place" can also maintain people's connectivity with their place of origin (Bergstén and Keskitalo, 2019), which benefits migrants by providing them with a sense of feeling at home, stability and continuity despite their mobility. There are, clearly, significant advantages to this connectivity in terms of social and financial remittances to be invested and mobilized for the benefit of sustainable forest management in places of origin.

Strategies and tactics that optimize sustainable livelihoods for leavers might include investing in educational scholarships either national or international, particularly in areas such as forest or broader environmental sustainability, that could potentially be put to good use if they return (Campbell, 2021). Developing associate membership for students and seasonal migrants linked to existing local forest and farm organizations in the place of origin, including roles to represent those business in city markets, is an additional option (Macqueen and Campbell, 2020). Enhancing information systems that connect migrants with their place of origin (Gelb and Krishnan, 2018) and improving remittance infrastructure (Burrell, 2017) can lead to local opportunities for sustainable and productive investment of these remittances in sustainable forest businesses. Mobilizing diaspora and supporting migrants' associations can be useful for this reason because it builds understanding of remittance processes. Similarly, it can be helpful to develop temporary and seasonal migration schemes, including through bilateral labour migration agreements, especially where forest-dependent communities have seasonal calendars where it makes sense to move in and out of those areas to match patterns of available work. Pre-departure training and job matching to make best use of people's skills and experiences at their destination can be very useful.

5.3 Maximizing options for those returning to or migrating into forests

Maximizing sustainable and remunerative livelihood outcomes for those who choose or are forced to move into or return to forest landscapes is a final important component of an approach to migration and forests. There is a spectrum of reasons for people to move into or return to forests. Some are solicited by others from their place of origin. Some move or return voluntarily, some reluctantly, and some under pressure; others are obliged to or forced to move or return (Newland, 2017). Here, there are critical considerations related to psychosocial counselling for returnees and recognizing the value of their skills and experience gained elsewhere (even if not formally). These skills can also be used to develop sustainable forest or climate-smart agriculture jobs that can address climate change-related push factors and adaptation. Processes are also needed that maintain and reclaim lands belonging to migrants during their absence. Strategies are needed for sustainably reintegrating migrants to maximize the benefit of information, skills and investment that they might bring with them, and ways of reducing social conflicts and enhancing cohesion if space in the place of origin has changed or contracted during their absence (Macqueen and Campbell, 2020). This requires reconsideration of the various push and pull factors noted earlier that shape migration for those who remain, leave or return.

Strategies and tactics that optimize sustainable livelihood outcomes for returnees might include strengthening social networks (including local organizations) that can maintain property and family care especially for seasonal migrants, developing reintegration packages so that returnees can reassume roles in the core organizations of the return environment (Kuschminder, 2017), including debriefing processes for local organizations to make the most of information and skills (Macqueen and Campbell, 2020), hosting welcome-back events that allow for cultural reassimilation, and ensuring opportunities for reinvestment of wealth gained elsewhere (Mulyoutamim, Lusiana and van Noordwijk, 2020).

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Who can do what to improve forest-linked migration outcomes?

6

From the preceding sections it can quickly be seen that three main types of actor can clearly improve outcomes for forest-linked migration: member-based organizations of Indigenous Peoples, local communities and smallholder farmers both within forest landscapes and also including diaspora and migrants associations (local organizations); technical, business and financial agencies who service those local organizations (support providers); and local and national public agencies responsible for investments in public policies and infrastructure (government).

6.1 Recommendations for local organizations

Local organizations are set up to secure rights, gather and wield information, pool members' finances into useful investments, share and thereby reduce costs, and represent their members in markets and decision-making processes. Recent surveys of 41 local organizations in six countries have shown how purposes of their establishment were spread almost equally across economic, environmental and social goals (Covey *et al*., 2021). Managing migration is not mentioned as a primary goal in those surveys. However, shaping and managing migration can be a useful approach for local organizations in facilitating economic revival, income generation, environmental sustainability and social cohesion in and around forest areas. But there are also dedicated diaspora and migrant associations that are set up more explicitly to handle migration issues.

Recent research suggests that, despite neoliberal reforms that have undermined many local organizations, the past 20 years have witnessed the establishment of more than 8 million new local organizations across the world (see Pretty *et al*., 2020). This huge increase in social capital is not only leading to increased forest and farm productivity, but could also contribute agency (albeit not as its primary purpose) for improving forest-linked migration outcomes. Organizational innovations within these groups are a driving force in the pursuit of rural prosperity (Macqueen *et al*., 2020) and therefore might help to diminish forced migration in favour of voluntary decisions. The following section outlines some of the innovations widely seen in local organizations that could improve forest-linked migration outcomes (Macqueen *et al*., 2020).

- **Democratic oversight bodies governing environmental stewardship:** For example, in Mexico, the general assembly of the Integradora Comunal Forestal de Oaxaca SA de CV (ICOFOSA, Oaxaca Integrated Community Forestry) oversees the overall sustainability of the value chain supplying the Unit of Community Forestry, Agro-pastoralism and Services (UCFAS) furniture business and the TIP Muebles retail business, both of which are owned by ICOFOSA. This has improved sustainability processes, quality standards and profitability (Klooster, Taravella and Hodgdon, 2015). More democratic and sustainable landscape management can reduce aspirations to migrate (or encourage skilled people to move or return to forest areas), protect forests and increase employment opportunities (e.g. for returnees).

- **Investment funds with negotiated benefit distribution and financial vigilance mechanisms:** For example, the Brazilian Cooperativa Mista Verde da Flona do Tapajós (COOMFLONA, Mixed Cooperative of the Tapajós National Forest) has developed a mechanism for the distribution of profit to a business investment fund (45 percent), dividends for cooperative members (20 percent), a fund to help the communities (15 percent), a legal reserve (10 percent), a healthcare fund (5 percent) and an education fund (5 percent) (Humphries, Andrade and McGrath, 2015). More accessible finance based on sustainable forest management and better social protection to members can reduce aspirations to migrate (or encourage skilled people to move or return to forest areas), and incentivize forest protection.

- **Social networks for forest landscapes offering better access to information, markets and decision-making:** For example, the Kenyan South Coast Forest Owners Association (SCOFOA) is connected via the Farm Forestry Smallholder Producers Association of Kenya (FF-SPAK) to information from and negotiations with the Kenya Forest Service on how to simplify licensing procedures for small tree growers (Kilonzi and Obuola, 2016). Better information and connectivity could allow potential migrant leavers to make better-informed decisions, while greater control of market and policy decision-making could reduce aspirations to migrate.

- **Processes for conflict resolution and justice in forest landscapes:** For example, the Mondulkiri Forest Venture organization in Cambodia ensured that their 13 community NWFP collector groups attained registered community forest agreements, so that they could avoid unwanted natural resource conflict from economic or social land concessions (Andaya, 2016). Better conflict resolution and justice could reduce aspirations to migrate and help reintegration of returnees while also improving forest protection.

- **Processes of entrepreneurial training and empowerment for both men and women:** For example, the Ulakuas Agroforestry Cooperative (CAIFUL) cooperative in Honduras trained members in reduced-impact harvesting, quality control and business management with an emphasis on increasing women's employment in the organization from 3 women to 22 between 2003 and 2015, including the greater representation of women in management (Gómez and Hodgdon, 2015). Sustainable business incubation in rural landscapes could harness the education skills of migrants, reduce aspirations to migrate, and encourage the reintegration of returnees.

- **Branding to reinforce local visions of prosperity and forest sustainability:** For example, in Ethiopia, the Birbirsa Cooperative developed its Bale Wild brand and obtained Rainforest Alliance certification, which not only reflects its strong commitment to sustainable forest management, but also highlights the fact that the forest understorey hosts the last wild stands of coffee from which all other genetic material originates (Lemenih and Idris, 2015). Branding around environmental quality improves profits that in turn could help to reduce aspirations to migrate while also protecting forests.

When local organizations are locally accountable, profitable and built on sustainable forest and farm management, they form a powerful agency to improve migration outcomes. Diversification as a strategy for climate resilience within such organizations also reduces perceived risks and thereby could further reduce aspirations to migrate while protecting forests (Macqueen, 2021).

6.2 Recommendations for support providers

Support providers to local organizations and individuals can also play a key role in helping to put in place the technical, business and financial skills necessary to deliver some of the integrated strategies described above – maximizing beneficial outcomes for those who choose to stay in forest areas, those who choose to leave, and those who choose to return. It is well known that in remote forest environments, enabling investments in advocacy for rights, organizational strengthening and in technical, business and financial support are often key to attracting asset investment that upscales promising value chains and initiatives (Elson, 2012). Many of these types of support can improve prospects for orderly, safe, regular and responsible migration, and mobility of people to and from forest landscapes. Actions that improve forest-linked migration outcomes might include:

- **support for local organizations to help them deliver their own development ambitions:** For example, supporting them to secure forest-tenure rights or support organizational development, technical extension services and professional and sustainable businesses that can mobilize and attract finance. Adopting a demand-driven approach to service provision against local organizations' own ambitions, rather than imposing an external agenda, is widely understood as efficient best practice.

- **inclusion of local forest organizations in biodiversity conservation and climate adaptation and mitigation efforts:** This is another important action support providers can undertake (rather than ineffective and sometimes disastrous attempts to exclude local organizations). For example, many support organizations are now committing to principles of locally led adaptation to climate and other changes (Soanes *et al*., 2021). Given the global trends of rural to urban migration, there may also be opportunities for support providers to help local communities to practise natural forest landscape regeneration following outmigration (Chazdon *et al*., 2020; Robson and Klooster, 2019).
- **improvement in financial services in remote forest areas:** Access to finance is a widespread problem in remote forest areas (see Macqueen *et al*., 2018). Ensuring financial inclusion and literacy for household members who stay behind in forest areas, together with efforts to improve and reduce the costs of financial remittance flows can significantly improve the benefits of migration, and reduce the aspirations to outmigrate from forest areas.
- **development of cross-cutting humanitarian, development and peace-building processes:** Humanitarian support providers deal with sudden, larger-scale forced migrations at the destination end. For example, refugee crises involve situations in which migrants into forest landscapes are likely to overwhelm the coping capacity of local organizations. Increasingly, crossovers have been observed between strategies for humanitarian and development aid and peacebuilding (see FAO, 2020b). Engagements that foster local organization in both displaced and host communities are the key to transitions away from the initial crisis towards longer-term development trajectories (Lie, 2017). Inevitably, host governments may resist the move from humanitarian to development approaches in protracted refugee situations – but this is an approach that offers few long-term solutions (Zetter, 2021).
- **the creation of dedicated migration and reintegration services:** Migration decisions are normally taken to improve livelihoods and can have benefits at both origin and destination. Setting up one-stop services that assist migrants with job searches, job matching and support services for job training can enhance these benefits. Similarly, these same one-stop services could help in facilitating financial remittance reinvestment at the locations of origin and help migrants with reintegration advice on returning. Mobilizing diaspora to offer social remittances to their place of origin through these migration and reintegration services would also be advantageous.

6.3 Recommendations for governments

Governments have roles to play, at the local level and in national policies and investment programmes. The political economy of decisions regarding migration and forests may impede long-term solutions. Nevertheless, there are key actions that governments can take to optimize forest-linked migration outcomes.

- **Awareness raising, public information and policies that facilitate and destigmatize migrant movements, especially forced migrations:** Some examples of this include simplified entry, registration and visa applications, fast-track recognition of foreign qualifications, dialogue with migrant representatives, and economic incentives for specific useful jobs (Guadagno, 2020). While not all these apply equally at both local and national levels, a positive tone on migration that is backed by supportive policies can help optimize migration outcomes.

- **Providing secure tenure in forest landscapes that is gender- and age-equitable:** Securing tenure in forest landscapes allows for an informed decision between long-term investments in land (vital to providing confidence in the value of long-term tree-planting or forest management) or migration for education and employment but with a stronger "sense of place" that may influence remittance flows. For example, securing tenure in rural China through stronger rental agreements has reduced the aspiration to migrate, whereas strengthening land ownership has increased the likelihood of migration, due to confidence that migrants can return without losing their land (Ren *et al*., 2020).

- **Forest-wise rural infrastructure investments that facilitate rural mobility from existing communities but without opening new forest frontiers:** For example, investments in the transport systems used for labour migration has proved helpful in countries such as China, as has information technology that allows migrants to maintain connectivity with their place of origin (Xiang and Lindquist, 2014). But care is necessary to avoid unwanted environmental impacts. For example, in Borneo, road investments in frontier areas have led to substantial deforestation (Alamgir *et al*., 2019). Understanding how these mediating drivers of migration influence outcomes is part of necessary migration governance (Van Hear, Bakewell and Long, 2018). For existing forest-dependent communities, improving mobility and connectivity reduces the prospect of potential migrants being sub-optimally trapped, and improves their informed decisions. But improving mobility into largely uninhabited areas for resource extraction while offering livelihood benefits to migrants, will have negative consequences on forests.

- **Integrated and migration-aware forest and agricultural policies and extension services that boost climate resilience:** Forest policies rarely mention migration, its impacts or how to optimize those impacts. Yet in India, for example, it was found that migrating and non-migrating households had different approaches to the adoption of agricultural extension advice. Households in which some migration took place were able to adopt agricultural extension advice on climate adaptation strategies, such as changing crop varieties, changing the land that was cultivated, irrigation, crop insurance, and soil and water conservation (Jha *et al*., 2018). This was attributed to increased exposure to relevant knowledge and awareness of government insurance programmes, in addition to the greater investment capabilities that came from remittances. Mainstreaming understanding of migration into forest policies and enhancing policy dialogue between stakeholder groups can help address such issues. Work in Nicaragua, for example, has led to the conclusion that extension services must accept, and seek to address, the generally disempowered situation of forest and farm smallholders that is driving migration (Radel *et al*., 2018) while also treating migration as a necessary adaptation strategy that can help to optimize outcomes for the most vulnerable actors in forest-linked migration.

- **Smooth pathways and reduce costs for remittance reinvestment:** For example, it is now widely understood from studies of migration to Europe that the benefits of migration remittances are greatly diminished without corresponding access to financial services in the countries of origin, since savings cannot accrue interest in deposit accounts, and cannot be reinvested in the local economy so as to build a credit history, necessary to get creditworthiness (Boccella and Salerno, 2019). Government-mediated migration programmes have much to recommend them. For example, the migration programme between Bangladesh and Malaysia generally reduces migration costs across multiple sectors and markets, subsidizes recruitment services, involves the private sector, and develops finance-for-migration services to increase reach to those who are resource constrained (Shrestha, Mobarak and Sharif, 2019).

Conclusions

7

The literature on forest-linked migration documents positive socioeconomic outcomes for both sending and receiving areas in many cases (with exceptions already discussed above). Yet there are contextual specificities that need to be governed if the environmental, forest-linked impacts of migration are also to be positive. Key among these is the need to avoid the policy creation of strong migration "pulls" into the remaining areas of natural forests or pre-existing territories of Indigenous Peoples and local communities through road building or settlement programmes that are often rooted in a desire to exert territorial control and develop economic growth through extensive agricultural development. Alternative economic development strategies are needed that focus on building productivity through intensification of existing land use via regenerative agroforestry techniques, with value addition across diversified value chains mediated by local organizations whose long-term survival is tied to the sustainability of land use.

Forest-linked migration is mediated both by local aspiration and the ability to move. Demographic growth and declining agricultural productivity, either though poor agricultural practice or the changing global climate, are strong drivers of migration, also complicated by additional political, economic, social and ecological factors. These factors have been recently strongly impacted by both climate change and COVID-19 pandemic. These shape either people's aspirations or ability to move, with marked gender and age differences. This calls for governance systems that understand these dynamics and the importance of the people and forest landscapes in which these drivers play out. It is worth emphasizing just how significant the effects of climate change on forest-linked migration are likely to be – requiring much more governance consideration in the immediate future.

Governing all aspects of forest-linked migration requires paying attention to those who remain, those who leave and those who return, and the patterns or cycles of their decisions to stay or migrate. A useful aim is to optimize outcomes for all three groups (securing their local public goods), qualified by the parallel need to maintain or restore forest cover at the same time (securing global public goods). This can generally be achieved through enabling investments (by implementing enabling policies and incentives) towards forest and farm productivity in forest landscapes for those who remain while also reducing impediments (policy barriers and disincentives) to migration and to flows of remittance, knowledge and skills for both leavers and returnees. Ensuring effective implementation in different forest landscapes where there may be hard socioeconomic and environmental trade-offs to negotiate is the key challenge.

Empowering local organizations, and government and support provider partnerships that assist these organizations, appears to be an effective strategy to optimize forest-linked migration outcomes. It can drive desired productivity gains while managing difficult trade-offs. Local member-based organizations have shown both innovation and efficiency in inclusive and sustainable forest landscape management, which were visible, especially during the recent COVID-19 and climate-related crises. Development and environment support providers have increasingly seen the benefits of adopting locally led pathways in adapting to change. Governments can do much to enable such pathways through developing and implementing policies and programmes on migration and forestry that both destigmatize migration, and create the tenurial security, public infrastructure, extension support and financial facilitation necessary to optimize forest-linked migration outcomes.

In summary, research and historical evidence suggests that migration is often a coping strategy in fast-changing forest landscapes. Well-governed migration can be good for the migrant, their remaining households and the host region, with ways of optimizing outcomes also for forests. It may not be possible to deliver all local and global public goods in all cases, but a positive approach to forest-linked migration is likely to have many more benefits than negative alternatives. And this will continue to be the case as climate change exacerbates further the impacts of forest-linked migration.

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Glossary

For this publication, the terms used are defined in line with those in *Migration Framework – Migration as a decision and an opportunity for rural development* (FAO, 2019).

Circular migration: Repeated movement of migrants between countries or areas, whether temporarily or long term.

Diaspora: People dispersed outside their original homeland.

Forced migration: When there is an element of coercion in the decision to make a migratory movement, including threats to life and livelihood, whether arising from natural or human-made causes.

Internally displaced persons: When a person or group of persons are forced to move because of armed conflict, generalized violence, violations of human rights, or natural or human-made disasters, but have not crossed an internationally recognized state border.

Migrant: A person who moves from one place to another.

Migration: The movement of a person or group of persons, either across an international border, or within a state, encompassing any kind of movement of people, whatever its length, composition and causes; it includes migration of refugees, internally displaced persons, economic migrants and persons moving for other purposes, including family reunification.

Permanent migration: When the migrant stays at his/her new destination for more than one year.

Refugee: When a person is forced to move across an international border, owing to a well-founded fear of persecution on the grounds of race, religion, nationality, membership of a particular social group or political opinion.

Remittances: The transfer of money (financial remittances), knowledge and skills (social remittances) that diaspora return to families and friends in their original homelands.

Rural migration: When migration takes place from, to and between rural areas, independently of the duration of the migratory movement.

Seasonal migration: When a migrant moves for employment purposes, based on seasonality (i.e. following the agricultural seasonal calendar) and therefore migrates for only part of the year.

Temporary migration: When a migrant has a specific purpose and later returns to their area of origin or migrates to another area.

Voluntary migration: When the decision to undertake migratory movement is undertaken on a voluntary basis.

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